Veterinary Dermatology
Dermatologie vétérinaire

Atopic dermatitis in cats

Jangi Bajwa

Feline atopy (also called non-flea non-food allergic dermatitis or feline atopic dermatitis) is a type 1 hypersensitivity reaction causing pruritic skin disease in cats associated with the presence of skin-fixed or circulating immunoglobulin E (IgE) antibodies specific to environmental antigens (allergens) (1,2). Feline atopy is regarded as the second most common allergy in cats after flea allergy dermatitis (3). In a retrospective study with data collected over 11 years (2001 to 2012) disease prevalence of feline atopy was reported to be 12.5% (4).

Increasingly, similarities between feline atopy and atopic dermatitis in humans and dogs are being documented. As in canine atopic dermatitis, feline atopy seems to be caused by an exaggerated IgE and immunoglobulin G (IgG) response to environmental allergens (5,6), but measurement of allergen-specific IgE does not help discriminate between normal and atopic cats (7). While cutaneous changes on skin biopsy from atopic cats are well-described and histopathologic findings of feline atopy have been studied in detail (8), it is not a reliable diagnostic tool. Histopathologic studies have helped us to understand the pathogenesis and similarities to atopic dermatitis in other species, including characterization of infiltration of activated antigen-presenting cells and T-lymphocytes in the skin of atopic individuals. Increased numbers of dermal mast cells, the predominance of CD4+ T-cells in lesional skin of cats with allergic dermatitis as well as increased CD4+ T-cells in non-lesional skin of affected cats compared with the skin of healthy cats are comparable to findings in the skin of human atopic patients (8).

As would be expected in an allergic patient, indoor and/or outdoor environmental allergens including insects play a role in exacerbating symptoms. Various studies have demonstrated effects of seasonality as well as the common allergens involved in the disease, which are likely affected by geographical variations and cultural differences that affect patient lifestyle. Clinically,

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The CAVD is a not-for-profit organization that promotes veterinary dermatology in Canada and provides continuing education for veterinarians, animal health technicians/technologists, and veterinary students. The CAVD welcomes applications for membership (www.cavd.ca).

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Conflicts of interest: In the last 5 years, Jangi Bajwa has received honoraria and/or has collaborated with Royal Canin, Zoetis, Hill's, Dechra and Elanco.

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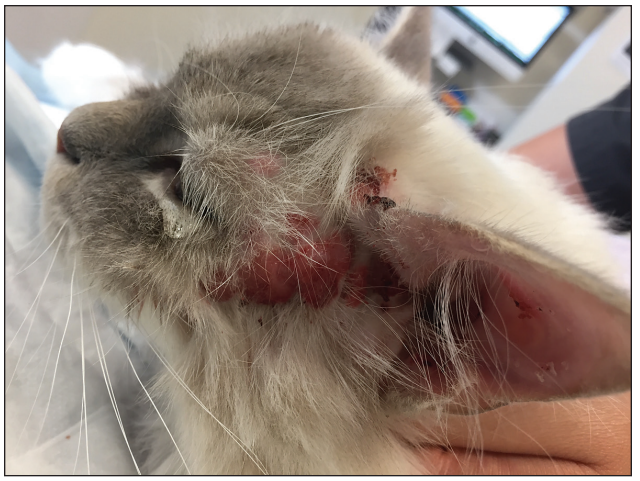

Figure 1. Head and neck pruritus leading to excoriations in a 2-year-old atopic cat.

feline atopy and food allergy appear indistinguishable. Moreover, concurrent allergies to environmental and food allergens have been reported (4,9).

Clinical signs and diagnosis

The primary symptom exhibited by an allergic patient (Figures 1, 2) is pruritus (including over-grooming). However, some feline patients may not present with a history of pruritus as they may exhibit such signs only privately, termed "silent grooming." Pruritus and/or cutaneous lesions secondary to feline atopy may be exhibited seasonally or non-seasonally, based on the specific offending allergens. Diagnosis is not straightforward due to lack of a unique presenting picture of the typical feline atopic patient. Some cats may present with self trauma leading to bilateral symmetrical alopecia, while others may exhibit excoriations. Recurrent otitis externa, miliary dermatitis, head and neck scratching, and eosinophilic granuloma complex lesions are other presenting patterns associated with feline atopy. These varied presenting complaints make the differential list for feline atopic dermatitis long (Table 1).

Miliary dermatitis and eosinophilic granuloma complex are distinctive clinical patterns associated with feline atopy that are not reported in dogs and humans (1). As cats with flea allergy or cats with food allergy can also develop these lesion patterns, they are not considered specific for atopy but are a generic manifestation of allergies in cats. Eosinophilic granuloma complex lesions include indolent ulcer, eosinophilic granuloma, and eosinophilic plaque lesions.

Historically, it was believed that allergic cats rarely developed secondary skin infections. However, secondary cutaneous infection is increasingly apparent in feline atopic patients, including pyoderma and *Malassezia* dermatitis (4,10). Eosinophilic plaques and indolent ulcers may also represent pyoderma (11). Methicillin resistant staphylococcal infections are also noted in cats affected by cutaneous disease in general, including cats affected by allergic skin disease. Young cats are predisposed to atopy, with most (more than 75% of cases) showing clinical signs within the first 3 y of life (1,4,12). As up to 22% of atopic

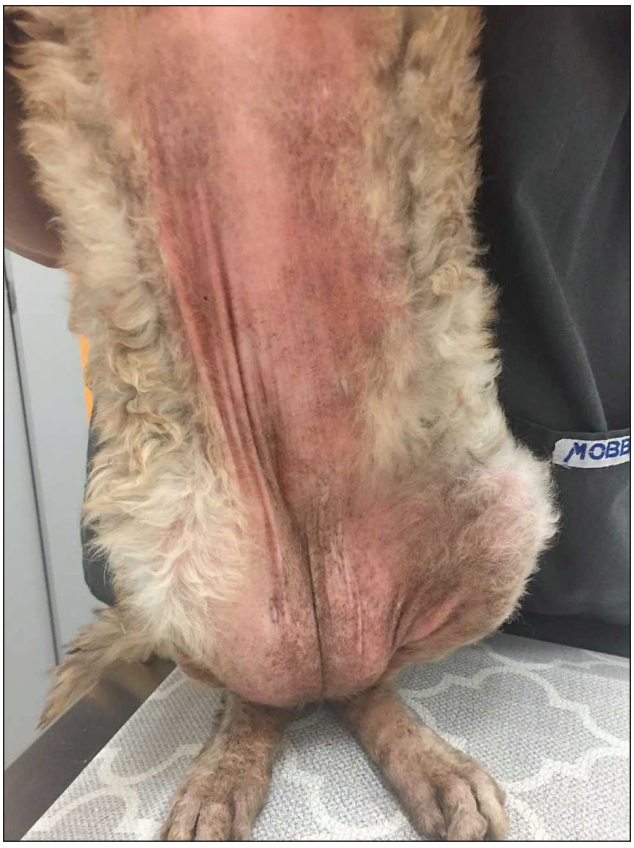

Figure 2. Ventral trunk alopecia due to overgrooming with secondary *Malassezia* dermatitis.

cats may exhibit onset of signs after 7 y of age (4), environmental allergies should not be ruled out solely based on age of presentation.

No single diagnostic test is available that can reliably diagnose feline atopy. A diagnosis is made based on suggestive historical information, clinical symptoms, and the exclusion of differential diagnoses (see Table 1). Due to varied presentations of the disease, a thorough diagnostic workup is usually required including a diet elimination trial of 8 to 12 wk (some patients may require multiple diet trials and possible restriction to indoor-only environment), flea prevention for a minimum of 8 wk (including all other household pets), treatment of secondary infections, dermatophyte culture, and monitoring by the pet owner for improved patient comfort, or a lack thereof. Skin biopsy is usually an unhelpful test as it does not add information with regard to the cause of allergic dermatitis (e.g., food *versus* environmental allergens), but can be useful to help rule out some differential diagnoses.

Commercial serologic allergy tests that help detect allergen-specific IgE for common regional allergens are available, but it should be kept in mind that serology does not distinguish between normal and atopic cats. Intrinsic atopic patients produce a low level of allergen specific IgE, thus reducing the role of IgE antibodies in the workup of these individuals. Intradermal allergy testing is primarily performed by and available through veterinary dermatologists. With the increased diagnostic accuracy of this test due to incorporation of intravenous fluorescein

Table 1. Differential diagnoses for feline atopic dermatitis.

Primary diseases	Secondary diseases
Flea bite hypersensitivity	Otitis externa
Food allergy	Otitis media
Mosquito bite hypersensitivity	Pyoderma — superficial or deep
Demodicosis	*Malassezia* dermatitis
Dermatophytosis	
Otodectic mange	
Cheyletiellosis	
Psychogenic alopecia	
Pemphigus foliaceus	

dye as well as use of increased feline-specific allergen concentrations in intra-dermal allergy testing, a referral to the local dermatologist should be offered to pet owners who have an atopic cat. As false negative reactions may occur with serum-based as well as intra-dermal allergy testing, combination testing using both modalities is often considered most beneficial. Allergy testing should follow a complete diagnostic workup and established clinical diagnosis of atopic dermatitis. The purpose of allergy testing is to select allergens to include for allergen specific immunotherapy and to gain knowledge about allergen avoidance measures indicated for the specific patient.

Treatment and management

Management for feline atopy is life-long and usually involves various treatments and lifestyle changes or adjustments for the patient as well as pet owners. Depending on severity of the disease, patient and owner compliance as well as overall patient health, an individualized treatment plan is usually designed. While drug-based treatment trials should not be a replacement for appropriate workup, symptomatic treatment of pruritus with glucocorticoids or cyclosporine is usually helpful in providing patient comfort. As cats are generally more resistant to the adverse effects of glucocorticoid therapy, this form of therapy tends to be used more frequently than in dogs, although long-term corticosteroid therapy demands baseline testing as well as ongoing monitoring along with client education about the potential for adverse effects. If corticosteroid therapy is continued beyond the stage of patient workup, use should be tapered down to the lowest possible frequency. Although used fairly often by some practitioners, long-acting injectable steroids should be used only as a last resort because life-threatening cardiac effects have been identified in up to 11% of cats (2). Other systemic adverse effects include diabetes and urinary tract infection.

Cyclosporine (Atopica) is licensed for use in cats at 7 mg/kg body weight (BW) once daily and can be particularly helpful for cats that do not tolerate glucocorticoids or have been diagnosed with diabetes. It is very well-tolerated in cats, has few adverse effects and is efficacious in cats affected by allergic skin disease (13,14). Many cats can be maintained on pulse therapy to help control symptoms long-term. This treatment is not recommended for cats that go outdoors, are known hunters, or are raw meat eaters as toxoplasmosis can result from the inhibition of T-lymphocyte function due to cyclosporine. Pruritus control may be also achieved with antihistamines or essential fatty acid supplements, although few patients are well-managed on one of these modalities alone. Essential fatty acids can be helpful due to their synergistic effect when administered in combination with other therapies. Oclacitinib (Apoquel) therapy has been attempted recently with short-term benefits noted in some patients but long-term studies or studies on a large set of atopic cats are lacking. Use of Apoquel in cats is considered "off label" therapy.

Allergen specific immunotherapy (ASIT) is a long-term treatment that is considered to be safe and effective with success rates range from 60% to 78% (15). The goal of immunotherapy is to successfully reduce or eliminate clinical signs associated with repeated exposure to causative allergens. A 50% to 100% improvement in clinical signs or decreased use of anti-pruritic drugs is usually regarded as a successful patient outcome. Clinical improvement is usually noted within 3 to 8 mo but can take up to 1 y in some cats. Allergen avoidance and control forms an essential component of managing a feline atopic patient, similar to canine and human counterparts. Most easily applied allergen avoidance measures are specific to house dust mite allergic patients including the use of air filters, treatment of carpets and mattresses, or use of dehumidifiers. The prognosis for an atopic feline patient is good for most cats in which some degree of allergen avoidance, allergen specific immunotherapy, and/or pruritus control can be implemented for improved comfort and prevention of secondary infections. Successful management, however, usually requires ongoing therapy.

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